wherein said alloy has a martensitic transformation start point of less than -186°C and an average coefficient of thermal expansion between 20° and 100°C of from 0.7 x 10^{-6}/K to 0.49 x 10^{-6}/K.

19. (New) The method as claimed in Claim 20, wherein the average coefficient of thermal expansion is from 0.65 x 10^{-6}/K to 0.49 x 10^{-6}/K.

REMARKS

Claims 1-19 are active in the present application. Claims 9-19 are new claims. Support for the new claims is found in the Table on page 7 of the specification.

REQUEST FOR RECONSIDERATION

Applicants thank Examiner Ip for the helpful and courteous personal interview of May 28, 2002. During the personal interview, the Examiner and Applicants' U.S. representative discussed the unobviousness of the presently claimed invention with regards to the physical properties of the alloys. It was discussed that by amending the claims to remove the "comprising" transitional phrase and limiting the coefficient of expansion (α) and the martensitic transformation start point (M_S) allowable subject matter may be identified.

New independent Claims 9, 16 and 18 have been added. Claims 10-15, 17 and 19 depend from the new independent claims. Claims 9, 16 and 18 incorporate the transitional phrase "consisting essentially of." Therefore, the claimed compositions cannot contain additional components which substantially affect the properties of the alloy.

The new claims contain an additional limitation that the thermal coefficient of expansion must be from 0.7 x 10^{-6} to 0.49 x 10^{-6}/K and the martensitic transformation start point is required to be less than -186°C. Support for the new claims is found in the Table on

page 7 of the specification. Data for four samples (A, B, C and D) are provided (this informatio is tabulated below for convenience). As is evident from the data presented in the Table, the limitations of claim 9 are supported by samples B, C and D. As is evident from the Table on page 7, it is only possible to achieve low martensitic transformation start point below -186C when the coefficient of thermal expansion is between 0.7 x 10^{-6} to 0.49 x 10^{-6}/K (Samples B, C, and D.)

Sample	Thermal coefficient of expansion 20 °/100 ° x 10^{-6}/(°K)	Martensitic transformation Point (°C)
A	0.31	-90
B	0.65	<-186
C	0.49	<-186
D	0.51	<-186

As was discussed in the Amendment and Request for Reconsideration filed with the Office on January 28, 2002, an alloy having a low martensitic transformation start point is advantageous in that it provides protection against undesired transformation to a martensite structure. After undergoing transformation to a martensite structure, the alloy may exhibit a different coefficient of expansion which is not desired, for example, when the alloy is used in a shadow mask.

The prior art references relied upon by the Examiner do not provide any indication or suggestion that a martensitic transformation start point of less than -186°C can be achieved.

The examples of the Fukuda patent do not fall within the currently claimed range for thermal coefficient of expansion as claimed in the new independent claims (Table 2 in Fukuda). The presently claimed thermal coefficient of expansion and martensitic

transformation start point are not inherent in the prior art alloys. This is demonstrated by sample A in the Table above. Sample A contains nickel (32.7%), cobalt (4.5%), manganese (0.06%), silicon (0.08%), and chromium (0.04%) and carbon (0.014%). Composition A meets the requirements of Ni, Co, Mn and Si, of Ishikawa, and Ni, Co, Si and C of Fukuda. This sample has a martensitic transformation start point of only -90°C. It has therefore been shown that a composition containing elements within the ranges required in the prior art do not inherently provide a martensitic transformation start point of less than -186°C.

Applicants submit that the new claims are novel and in view of the prior art cited as evidenced by the incorporation of the transitional phrase "consisting essentially of" and the limitations to martensitic transformation start point and thermal coefficient of expansion. The new Claims are not obvious in view of the prior art cited as evidenced by the fact that compositions falling within the prior art compositional requirements have been shown to exhibita martensitic transformation point greater than -186°C.

In the Office Action of April 8, 2002, Claims 1-8 were rejected under 35 U.S.C. § 103(a), with the Office combining the disclosure of Fukuda (U.S. 5,236,522) with the disclosures of Inoue (U.S. 5,236,522), Kato (U.S. 5,164,021) and Ishikawa (U.S. 5,164,021).

Applicants note that the disclosure in the Fukuda patent (column 2, lines 58-65) would lead one of ordinary skill in the art to prepare an Fe-Ni-Co alloy having more than 0.1% by weight of Mn. The Fukuda patent specifically states "Any content below 0.1% would assure no appreciable improvement in forging adaptability." Therefore, the Fukuda patent suggests that alloys containing less than 0.1% Mn would not be able to provide the desired physical properties and performance characteristics.

Directly contradictory to this, the present invention requires that the Mn concentration be less than 0.1% (see Claim 1). Fukuda discloses the criticality of the Mn content at a level

outside of the presently claimed range. If the Mn content is critical in order to obtain the Fukuda invention, and the presently claimed invention requires a Mn level outside of the critical range required by Fukuda, the present invention and the Fukuda invention must be different. The Fukuda patent teaches away from the presently claimed invention and therefore provides no motivation for its combination with the other cited art. Applicants therefore submit that the application of the Fukuda reference is inappropriate, and the Fukuda reference should not be combined with the other prior art cited.

The Inoue, Ishikawa and Kato patents do not disclose compositions adhering to the presently claimed limitations. The Inoue patent does not disclose inclusion of cobalt, and requires a maximum carbon content of 0.005 wt%, the Ishikawa patent requires a greater concentration of carbon (0.02 - 0.25% versus 0.005 - 0.02% presently claimed). The Kato patent permits Mn at a concentration of less than 1%. Similarly, Ishikawa allows Mn to be present in a concentration of 0.005 to 0.70%. The Inoue patent does not identify Mn as a critical component of the alloy composition.

In light of these differences, the prior art cited cannot render the presently claimed invention obvious since the contradictory disclosures of the references do not provide motivation for their combination and the references individually do not disclose a composition meeting the present claim limitations.

Applicants submit the amendment to the claims places all claims in condition for allowance in view of the remarks above. Applicants respectfully request the withdrawal of the outstanding rejections and the passage of now all pending claims to Issue.

Respectfully submitted,

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IN THE CLAIMS

--9-19. (New).--